

29 September 1967

DEVELOPMENT OBJECTIVES

Common Stage for ☐ High-Power Stereoviewers
(Alignment Device for Stereoviewers)

1. INTRODUCTION

These development objectives describe the requirements to be met in the design and fabrication of a common stage mechanism to be used as an attachment to a ☐ High-Power Stereoviewer.

2. GENERAL DESCRIPTION

The present ☐ High-Power Stereoviewer has two independent chip stages, each capable of motion along the X, Y and Z (stage focus) axes of the instrument. However, it is often desirable to translate both film chips concurrently in X and Y in order to scan large areas. This modification is intended to provide this capability without destroying the necessary differential (independent) X and Y motions and the present precision stage focusing capabilities.

The device would permit simultaneous (common) movement of both film chips under the objectives of the Stereoviewer and, at the same time, permit small independent motions of one film chip with respect to the other in order to provide differential orientation of the stereo pairs. The design is intended to minimize the time necessary to re-establish a stereo model when moving from one location to another while viewing the chips.

One possible configuration for this device might consist of a fixture, mounted between the two stages of the Stereoviewer, that would maintain a fixed relationship between the film chips viewed on the stages. The film chips will be placed on the fixture for viewing; moving one stage along either the X or Y axis will cause the same motion to occur in both the film chips simultaneously. Also, incorporated in the fixture will be some means of obtaining a differential motion along the X and Y axes of one stage. The stage focus capability shall remain unchanged and the independent focusing of each stage shall be retained.

3. REQUIREMENTS

3.1. Mechanical

3.1.1. The fixture shall be compatible with existing ☐ High-Power Stereoviewers and function as an attachment to that instrument. A minimum of modification to the Stereoviewer is desirable, and the fixture shall be removable from the Stereoviewer, although a semi-permanent attachment is acceptable.

3.1.2. The fixture shall be flexible in some way as to allow independent Z axis motion of the stages of 1/2 inch to allow independent focusing of the stages.

3.1.3. The fixture shall ensure common X and Y axis motions throughout the entire present 2 X 3 inch translations of the chip stage. In this respect, it is of great importance that the device have precise motions with little backlash or lost motion (0.005 inch maximum) of one viewing stage with respect to the other. Motions shall be smooth and free of chatter.

3.1.4. The fixture shall incorporate, in addition to the common X and Y axis motions above, a differential motion of one viewing area with respect to the other of approximately + 1/4 inch in both the X and Y directions. These motions shall be precise with little backlash or lost motion (0.003 inch maximum) and shall be smooth and free of chatter.

3.1.5. The fixture shall include film holders at both viewing areas sufficient to accommodate a 4 X 5 inch film chip size, and which shall allow movement of the chip so as to permit viewing of any 2 X 3 inch area within the total area of the 4 X 5 inch chip.

3.1.6. The fixture shall ensure that the film chips remains in focus over the entire viewing area of the device. Minimum depth of focus is determined by that of a Fluotar 10X objective operating at a system magnification of 200X.

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3.2. Miscellaneous

3.2.1. One (1) complete set of engineering drawings, consisting of an assembly and details, shall be submitted with the prototype. These drawings shall accurately describe the device in its final configuration.

3.2.2. Subsequent production of the device, after evaluation and acceptance of the prototype, will be dependent upon the cost of the device relative to the cost of the Stereoviewer with which it is to be used. The cost proposal shall include estimates of unit manufacturing cost for quantities of 10, 25, 50, 100 and 200 fixtures.

3.2.3. Any special tools or fixtures required for operation of the device shall be considered as being a part of the prototype and shall be included in the cost proposal.

3.2.4. An artists conception of one possible configuration of the fixture has been attached to better illustrate the problem. One viewing area of the device could be attached to one stage of the Stereoviewer. Operation of the X and Y controls of that stage would cause the other viewing area to slide on its associated Stereoviewer stage and follow the X and Y motions of the driver stage. Hinges might be incorporated at each end of the connecting center piece to allow individual stage focus. Drive screws might be incorporated in the connecting center piece to provide for the differential X and Y axis motions.

3.2.5. Imaginative alternatives to the above fixture design are highly desirable and are solicited as are alternative methods of ensuring common and differential stage motions (e.g., a direct connection between the two stages of the Stereoviewer rather than a separate fixture).

3.2.6. A ☐ High-Power Stereoviewer will be made available to the contractor if necessary as Government furnished equipment for a reasonable period during the contract.

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